Date: February 29, 2016
From: David C. Yang (University of California, Irvine)
To: Denis Healy & the NBER Household Finance Working Group Grant Committee
Subj: HF research grant

I am writing to apply for the NBER Household Finance Working Group research grant. Thank you for taking time to read over my application.

There are three items in this application packet: (1) Research Proposal; (2) Budget; (3) My CV. This is my first time writing a grant application to the NBER. I believe I have followed all the instructions, but if other information would be helpful, please don't hesitate to ask.

Thanks!
David

--
David C. Yang
Assistant Professor of Finance
University of California, Irvine
Email: david.yang@uci.edu
Website: www.DavidCYang.com

Untenured Authors

The NBER HF Call for Proposals notes that it particularly welcomes applications from untenured faculty members and advanced doctoral students. I am an untenured faculty member at the University of California, Irvine. My co-author is a former classmate who decided to pursue a non-academic career after finishing his PhD, but remains interested in investigating this research agenda.

Posting Processed Data for Public Use

The current paper draws from public US databases. We plan to release the processed data in a useable format so other researchers can easily build on our work. We plan to do the same for the international data we collect using this grant.

Title & Abstract

"Household Risky Ratio and Expected Stock Returns" (with Fan Zhang)

The "household risky ratio," the ratio of equities assets to credit assets directly owned by the household sector, is a strong negative predictor of the equity premium in the US stock market. This variable has predictive power beyond the standard return forecasters, such as the cyclically adjusted price-earnings ratio, the term spread, and the equity share of issues. The predictability is not explained by the Modigliani-Miller effect, where more equity issuance makes equities safer and lowers the equity risk premium. Because the household sector holds more equities when future equity returns are lower, the household sector's investments suffer from a 16% lower Sharpe ratio, relative to a constant equity exposure benchmark.

Significance

This research agenda shows how household financial decisions connect to aggregate movements in asset prices. Over the last few decades, one of the biggest changes in asset pricing research is the recognition that risk premia change over time. Cochrane (2011) provides an excellent summary of this change and emphasizes that the debate over whether or not risk premia change over time is largely over. The debate now focuses on *why* risk premia change over time.

Our paper argues that demand shocks from households drive movements in risk premia. We show the "household risky ratio" is a strong negative predictor of the US equity premium. In colloquial terms, our paper is a rigorous version of the idea that "in 1999, households owned lots of stocks and stocks subsequently had poor returns" whereas "in 2009, households owned fewer stocks and stocks subsequently had strong returns". A potential reason for this type of household behavior is extrapolative beliefs (Greenwood and Shleifer, 2014). Rational explanations are also possible, but our finding is separate from standard consumption CAPM theories, which focus on a representative agent of the entire economy. This paper focuses on robustly showing an empirical finding, but we plan to explore the theoretical implications more fully in future work on this research agenda.

Our result is robust to various checks. First, we verify its statistical accuracy, as there are common pitfalls, such as Stambaugh (1999) bias, in these types of return forecasting regressions. Second, we show that the household risky ratio has forecasting power not captured by the standard return forecasting variables, such as the cyclically adjusted price-earnings ratio (Campbell and Shiller, 1988), the term spread (Fama and Schwert, 1977; Campbell, 1987), and equity share of issues (Baker and Wurgler, 2000). Third, we show that our effect is not simply due to the fact that as corporations issue more equity, the equity becomes less risky and hence has lower future returns ("Modigliani-Miller effect").

Our empirical results also have welfare implications for households. As discussed, we find that the household sector holds more equities when future equities returns are lower. This "mistiming" (setting aside the rational vs behavioral debate for now) lowers investment returns for households. The Sharpe Ratio reduction is 16%, relative to a constant equity exposure benchmark. In a log utility framework, this reduces annualized investment returns for the household sector by 50bps, which accumulates to a meaningful sum when compounded over the working lifetime of say 40 years for an average worker.

Paper Status & How Grant Resources Will Help Advance the Research
The current draft of the paper demonstrates the core empirical fact, its robustness, and tests against alternative hypothesis. We will start circulating the paper for comment shortly by submitting it to conferences (hence the conference allocation in the budget) and are looking forward to that feedback to improve the paper.

We would like to further extend this research (either in this paper or in a separate paper) with international data. Our current draft uses U.S. data, but a robust empirical fact should also hold up in other countries as well. We will first focus on industrialized economies, as they have longer history of equity markets. In our budget, we allocate funds for hiring of research assistants to aid in assembling the data (e.g. some files may need to be digitized) as well as paying for translation if necessary (e.g. documentation is sometimes not in English). Where possible, we will use cheaper substitutes such as Amazon Mechanical Turk to maximize impact of grant dollars.

References
Baker, M. and Wurgler, J., 2000. The equity share in new issues and aggregate stock returns. the Journal of Finance, 55(5), pp.2219-2257.
Campbell, J.Y., 1987. Stock returns and the term structure. Journal of Financial Economics, 18(2), pp.373-399.
Campbell, J.Y. and Shiller, R.J., 1988. Stock prices, earnings, and expected dividends. The Journal of Finance, 43(3), pp.661-676.
Cochrane, J.H., 2011. Presidential address: Discount rates. The Journal of Finance, 66(4), pp.1047-1108.
Fama, E.F. and Schwert, G.W., 1977. Asset returns and inflation. Journal of Financial Economics, 5(2), pp.115-146.
Greenwood, R. and Shleifer, A., 2014. Expectations of returns and expected returns. Review of Financial Studies, 27(3), pp.714-746.
Stambaugh, R.F., 1999. Predictive regressions. Journal of Financial Economics, 54(3), pp.375-421.

<p style="text-align: center;">=Budget=</p>

Item	Amount	Note
Travel to conferences	$5,100	$1700 for a three-day conference (airfare, lodging inclusive of taxes and fees, food) x 3 trips. This number is based on my trip to the AEA which was $1653.12.
Travel (from California) to meet with co-author in Boston	$6,750	$2250 for a one-week trip (airfare, lodging inclusive of taxes and fees, food) x 3 trips. This number is based on the three-day budget above + an additional four days.
Data Collection	$7,000	Current paper uses US data. We want to extend to international data. 350 hours of RA time x $25 per hour (including taxes). Where possible, we will use cheaper substitutes such as Amazon Mechanical Turk to maximize impact of grant dollars.
TOTAL	$18,850	

David C. Yang

Updated:	January 2016
Email:	david.yang@uci.edu
Web:	www.DavidCYang.com
Address:	University of California, Irvine
	Paul Merage School of Business
	SB2, 319
	Irvine, CA 92697

Academic Positions

2015-Present   Assistant Professor of Finance, Univ. of California, Irvine, Paul Merage School of Business

Education

2015   HARVARD UNIVERSITY
Ph.D. in Business Economics
Dissertation: "Leverage, Derivatives, and Asset Markets"

2012   HARVARD UNIVERSITY
A.M. in Business Economics

2009   HARVARD UNIVERSITY
A.B. in Applied Mathematics
magna cum laude, Phi Beta Kappa

Research Areas

- Asset Pricing, Behavioral Finance, Frictional Finance, Investments

Working Papers and Publications

- "Does the Tail Wag the Dog? How Options Affect Stock Price Dynamics" (with Fan Zhang).

- "Disagreement and the Option Stock Volume Ratio".

- "Skewed Bidding in Pay-Per-Action Auctions for Sponsored Links," (with Nikhil Agarwal and Susan Athey), American Economic Review: Papers and Proceedings, May 2009.

Teaching

As instructor at University of California, Irvine:

2015-2016   Investments (Health Care Executive MBA, Fully Employed MBA, and Undergraduate)

As teaching assistant at Harvard University:

2012	Financial System in Extremis (MBA), Teaching Assistant for Jeremy Stein
2012	Behavioral and Value Investing (MBA), Teaching Assistant for Robin Greenwood
2011	Behavioral Finance (PhD), Teaching Assistant for Jeremy Stein

Honors and Awards

2016	UC Irvine Council on Research, Computing and Libraries (CORCL) grant
2014-2015	Harvard University Dissertation Completion Fellowship
2013	American Finance Association Student Travel Grant
2010-2013	National Science Foundation (NSF) Graduate Research Fellowship
2009-2014	Harvard Business School Doctoral Fellowship
2007	Harvard College Scholar
2006 & 2008	John Harvard Scholar